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ABSTRACT

The high cost of providing public services in urban areas of high population density is not always matched by a high capacity to meet that cost. The additional costs that must be borne by taxpayers in urban areas are collectively termed the "municipal overburden." The literature on municipal overburden has failed to recognize that this condition is a relative one and has failed to develop an adequate method for measuring it. By defining a "minimum bundle" of public services that a municipality can reasonably be expected to supply, we can make comparisons between the per capita costs for such services from city to city. Municipal overburden can then be expressed in terms of the degree to which these costs force a tax effort above a set level. Using such a measure, described in detail in this document, the authors have determined that a high degree of overburden exists in the 62 New Jersey urban aid communities studied, particularly in larger and poorer communities, though there are notable exceptions. The problem of overburden may be solved only by addressing the entire cost structure of local government finance, rather than concentrating on adjustments in school financing formulas alone. (Author/PGD)

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MUNICIPAL OVERBURDEN IN NEW JERSEY: AN ASSESSMENT

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no.2

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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MUNICIPAL OVERBURDEN IN NEW JERSEY: AN ASSESSMENT

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ABSTRACT

MUNICIPAL OVERBURDEN IN NEW JERSEY: AN ASSESSMENT

Urban school districts often find themselves in a relatively difficult fiscal position becuase their tax base must also support high levels of non-educational public services. These higher non-educational claims on urban tax bases come from the higher costs of providing municipal services in urban areas, and the extra public services that tend to be required in cities because of their high population densities, and their large concentrations of poor and elderly--two groups that put larger than average demands on local fiscal resources. Collectively these factors result in a condition commonly referred to as municipal overburden.

In this paper we attempt to provide a precise conceptual definition of municipal overburden, and demonstrate, using a sample of sixty-two New Jersey municipalities how the concept of overburden can be empirically measured.

We examine the literature on municipal overburden, and find it deficient, because it fails to provide a comprehensive definition of the problem. We argue that each local government has a set of non-discretionary, or required public services that it must provide, because of legal requirements, technical requirements (towns with tall buildings necessitate fire companies with hook and ladder trucks), and generally accepted norms and standards within the state. We then define municipal overburden in terms of the fiscal effort, i.e. tax rate, necessary for each community to provide the required, or "minimum bundle," of public services. The fiscal effort necessary in each community is a function of the cost of the "minimum bundle" in each community, and the share of this cost that is paid directly by the local residents.

Based on this measure of municipal overburden, we have determined that a high degree of overburden exists in nearly all New Jersey's "urban-aid" communities. Overburden is in general greatest in New Jersey's larger and poorer communities. However, such generalizations hide the fact that significant variation in the degree of municipal overburden exists within different types of communities. In particular, a number of rural communities also have a high level of municipal overburden.

We conclude by arguing that the problem of municipal overburden is a general problem of local government finance, namely, too many competing needs for a limited amount of resources, rather than specifically a problem of school finance. This suggests that public policies designed to address the issue of municipal overburden must directly address the issue of large "minimum-bundles" of non-education public services, rather than attempt to make small adjustments in school financing formulas.

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I.

New York City's recent fiscal crisis has served to highlight the seriousness of the problems facing American cities. Continually rising costs of providing public services, coupled with a stagnating tax base have resulted in serious budgetary crises in a number of cities. As revenue sources become scarcer, competition for fiscal resources within cities grows. Public schools must compete actively with municipal functions for scarce resources.

The consequences for public education of the difficult fiscal problems of cities are difficult to predict. In this paper we will attempt to assess the potential seriousness of urban fiscal problems for New Jersey communities. By measuring the burden New Jersey communities must bear in order to meet their non-education obligations, often called municipal overburden, we will be able to begin to evaluate the impact of municipal fiscal problems on the provision and financing of public education in New Jersey. In Section II we will discuss the concept of municipal overburden and explore its relevance to educational finance. In Section III we will present some common measures of municipal overburden for a sample of New Jersey municipalities, and discuss their limitations. In Section IV we will introduce alternative measures, and argue for their usefulness in assessing the magnitude of fiscal problems of cities. Finally, in Section V we will summarize our results and draw some conclusions.

II.

Much of the history of school financing reform has been characterized by an attempt to equalize the resources available for the support of public education across school districts within a state. As long as the country was predominantly agricultural, wealth tended to be quite evenly distributed spatially.

Hence local school financing ability was reasonably equal. However as the country became increasingly industrialized and urban, the spatial distribution of wealth, and hence the local ability to finance education, became more concentrated. Near the beginning of this century, reformers argued that the solution to the problem of unequal distribution of resources to finance education was increased state financing. In the decades that followed various state funding formulas were suggested, and occasionally adopted.[1]

The recent court challenges to the heavy reliance on locally raised revenues for the funding of education have spurred interest in equalizing financing ability across school districts. New state funding formulas have been adopted during the last several years in a number of states to advance this goal. Despite this flurry of activity, some analysts are suggesting that the net result of much of this reform may be a worsening of the fiscal position of large city school districts.[2] The claim is made that cities' ability to support local schools is constrained, not necessarily by inadequate wealth, but rather by greater non-educational demands on local resources. These higher non-educational demands on the local tax base result primarily from higher cost of providing services in cities, and from the extra services that tend to be required in cities because of their high density and their large concentrations of poor and elderly--two groups that put larger than average demands on local fiscal resources.[3]

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[1] For the history of school financing reform see Benson [4], Coons, Clune and Sugarman [8], or Grubb and Michelson [11].

[2] See Levin et. al. [17].

[3] A much more detailed discussion of the causes of high municipal expenditures is found in Section III.

Collectively these factors result in a condition commonly referred to as municipal overburden. Even if school finance reform legislation resulted in equalizing the fiscal resources of each jurisdiction, the extra claims on those resources for non-educational purposes in cities would in effect reduce the reservoir of resources available for school finance. If, in order to provide a "thorough and efficient" education for each child, it is necessary to spend more money for children from poor families, then cities with concentrations of poor face an additional burden. From the perspective of the educator, the additional demands on scarce local resources for non-educational purposes create an additional, or overburden on the local residents.

A number of discussions of municipal overburden can be found in recent education literature. There is wide agreement on what municipal overburden is, however, there appears to be no concensus on how one is to measure it. A number of alternative measures have been suggested. For instance, Gutherie, Kleindorfer, Levin and Strout [17] argue that "...the residents of some school districts, particularly urban ones, are vulnerable to paying property taxes for many more purposes than simply the support of schools. These additional taxes are frequently referred to as municipal overburden"[4] (p. 119). Alternatively, Sacks [21] defines municipal overburden in terms of local school expenditures as a percentage of total expenditures. He notes that this ratio is lower in central cities than in suburbs, implying higher non-education expenditures in the cities. Other authors define municipal overburden in terms of higher levels of non-educational expenditures in cities, higher property tax rates in cities, and smaller proportions of total tax levies

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[4] Coons, Clune and Sugarman [8] also suggest that the easiest way to measure overburden is to measure local non-educational taxes.

devoted to schools in cities.[5]

The problem with all of these measures is that they are correlates of municipal overburden, rather than direct measures of burden. The difficulty in defining a burden measure is that we must determine an appropriate standard or scale by which to guage the relative burden of communities.

In the next section of this paper we will attempt to achieve two goals. We want to sketch a picture of the local government fiscal environment in New Jersey. To achieve this end we will present fiscal data for a sample of sixty-two New Jersey municipalities that were chosen as representative of the 567 municipalities that make up the state. We also, in presenting this data, want to point out the difficulties of using any single fiscal measure as a measure of municipal overburden.

III.

Our sample includes sixty-two New Jersey communities. In all cases the school district boundaries are coterminous with the municipal boundaries. The sample includes the 28 "Urban Aid" cities, plus 34 other communities picked so as to represent the range of community types found throughout the state. In choosing the non-urban-aid portion of our sample, two criteria were used. Communities were characterized by a measure of socio-economic status (SES) developed by the Department of Education and by an index of urbanization developed by the Department of Community Affairs. Appendix I lists the sample communities, and indicates how they were characterized.

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[5] See Listokin [18], Gurwitz [12], Sacks [20] and Berke, et. al., [5].

Before looking at the sample in detail, we will look at some summary data for the urban-aid cities and the non-urban-aid cities in our sample. In 1974 the 28 urban-aid cities spent an average of $307 per capita on non-educational public services. The average per capita figure for non-urban-aid communities was $215. In order to finance these expenditures, urban-aid cities imposed an average municipal tax rate five times higher than non-urban-aid cities, 1.86 as compared to 0.37. In addition to tax revenues, cities received grants from the state and federal governments. Per capita grants to urban-aid cities averaged $89 in 1974, as compared to an average of $15 for non-urban-aid cities.

In order to better understand why urban-aid cities spend more on municipal services it is useful to disaggregate expenditures into several major categories. Table 1 presents per capita expenditures in major spending categories for urban-aid and non-urban-aid cities.

The major expenditure categories where the urban-aid cities significantly outspend the smaller non-urban-aid communities are general government, public safety, health and welfare. It is interesting to note that the oft-heard suggestion for the solution to fiscal problems of cities, the state or federal takeover of welfare and the courts, will have only a very minor impact on city expenditure patterns.

Because averages can be deceptive, Table 2 lists per capita expenditure data for selected categories for each of the 62 communities in our sample. In addition to dividing the sample into urban-aid and non-urban-aid communities, the expenditure data are presented for the group of ten moderate and higher SES urban communities, eight high SES suburban communities and ten rural communities.

TABLE 1

PER CAPITA MUNICIPAL EXPENDITURES FOR SELECTED BUDGET CATEGORIES, 1974

BUDGET CATEGORY	URBAN-AID CITIES	NON-URBAN-AID CITIES
General Government	$ 79	$ 34
(Judicial)	(2)	(2)
Public Safety	84	47
(Police)	(46)	(31)
(Fire)	(35)	(14)
Streets & Roads	16	20
Sanitation	17	14
Health	12	3
Welfare	5	0.5
Recreation	9	7
Debt Service, Employee Benefits, Misc.	85	89.5
TOTAL	$307	$215

TABLE 2

PER CAPITA MUNICIPAL EXPENDITURES FOR SELECTED CATEGORIES, 1974

URBAN AID-CITIES

MUNICIPALITY	*TOTAL EXPENDITURES	GENERAL GOVERNMENT	PUBLIC SAFETY	STREETS & ROADS	HELATH & WELFARE	RECREATION
ATLANTIC CITY	630.	138.	154.	24.	14.	31.
CAMDEN CITY	299.	89.	99.	14.	5.	3.
BRIDGETON	182.	44.	39.	18.	7.	7.
MILLVILLE	201.	55.	35.	27.	4.	0.
VINELAND	197.	54.	31.	23.	9.	2.
EAST ORANGE	418.	96.	91.	16.	27.	11.
IRVINGTON	127.	45.	72.	22.	8.	5.
MONTCLAIR	260.	40.	74.	17.	10.	11.
NEWARK	505.	121.	100.	9.	28.	21.
ORANGE	326.	48.	103.	22.	17.	13.
BAYONNE	254.	39.	79.	20.	10.	12.
HOBOKEN	315.	81.	76.	19.	13.	4.
JERSEY CITY	249.	72.	120.	15.	30.	7.
NORTH BERGEN	262.	29.	65.	14.	5.	5.
UNION CITY	136.	68.	75.	17.	10.	4.
WEST NEW YORK	154.	50.	73.	19.	6.	11.
TRENTON	338.	105.	87.	7.	28.	8.
NEW BRUNSWICK	248.	56.	88.	8.	4.	9.
PERTH AMBOY	264.	72.	50.	17.	6.	12.
ASBURY PARK	404.	94.	82.	33.	13.	7.
LONG BRANCH	202.	80.	33.	15.	4.	3.
NEPTUNE TOWNSHIP	153.	59.	30.	27.	6.	2.
LAKEWOOD	215.	44.	37.	25.	6.	6.
PASSAIC CITY	235.	66.	67.	20.	8.	2.
PATERSON	270.	55.	67.	12.	10.	5.
ELIZABETH	160.	62.	65.	19.	14.	0.
PLAINFIELD	321.	140.	70.	27.	11.	7.
PHILLIPSBURG	145.	40.	37.	12.	1.	6.

*Total expenditures includes debt service, employee benefits, and miscellaneous other expenditures.

TABLE 2 (con't.)

PER CAPITA MUNICIPAL EXPENDITURES FOR SELECTED CATEGORIES, 1974

NON URBAN-AID CITIES

MUNICIPALITY	*TOTAL EXPENDITURES	GENERAL GOVERNMENT	PUBLIC SAFETY	STREETS & ROADS	HELATH & WELFARE	RECREATION
ENGLEWOOD CLIFFS	319.	49.	102.	42.	4.	11.
FORT LEE	198.	33.	62.	14.	5.	3.
LITTLE FERRY	170.	31.	56.	16.	1.	4.
MOONACHIE	333.	77.	93.	33.	2.	5.
NEW MILFORD	128.	18.	42.	16.	2.	3.
WALDWICK	166.	26.	33.	15.	4.	5.
CINNAMINSON	118.	23.	32.	23.	0.	1.
FLORENCE	132.	38.	25.	17.	1.	7.
MOORESTOWN	227.	50.	44.	26.	1.	11.
LAUREL SPRINGS	102.	32.	20.	18.	1.	0.
PENNSAUKEN	137.	32.	16.	12.	1.	4
DENNIS TWP.	161.	34.	6.	18.	5.	0.
MIDDLE TWP.	186.	46.	42.	26.	3.	1.
OCEAN CITY	607.	143.	164.	79.	2.	44.
WILDWOOD CREST	620.	126.	129.	86.	4.	54.
MILLBURN	368.	64.	105.	37.	5.	18.
WASHINGTON TWP.	125.	24.	25.	28.	1.	5.
HAMILTON TWP.	301.	27.	10.	19.	7.	6.
WASHINGTON TWP.	186.	47.	27.	38.	3.	0.
SAYREVILLE	194.	33.	41.	22.	3.	9.
CHATHAM BORO	201.	23.	46.	32.	2.	5.
PEQUANNOCK	94.	28.	25.	18.	11.	11.
PLUMSTED	78.	16.	9.	4.	3.	1.
CLIFTON	205.	25.	66.	11.	3.	5.
POMPTON LAKES	147.	29.	40.	18.	4.	3.
PITTSGROVE	92.	23.	1.	14.	1.	0.
UPPER PITTSGROVE TWP.	88.	13.	5.	17.	2.	0.
BEDMINSTER	278.	74.	29.	57.	8.	2.
MONTGOMERY	197.	41.	24.	32.	6.	4.
NEWTON	157.	30.	45.	14.	2.	5.
HILLSIDE	245.	36.	120.	19.	4.	1.
NEW PROVIDENCE	206.	32.	38.	21.	2.	6.
WESTFIELD	191.	27.	54.	14.	3.	18.
BELVIDERE	178.	37.	34.	33.	2.	2.

*Total expenditures includes debt service, employee benefits, and miscellaneous other expenditures.

TABLE 2 (con't.)

PER CAPITA MUNICIPAL EXPENDITURES FOR SELECTED CATEGORIES, 1974

MODERATE AND HIGH SES URBAN COMMUNITIES

MUNICIPALITY	*TOTAL EXPENDITURES	GENERAL GOVERNMENT	PUBLIC SAFETY	STREETS & ROADS	HELATH & WELFARE	RECREATION
FORT LEE	198.	33.	62.	14.	5.	3.
NEW MILFORD	128.	18.	42.	16.	2.	3.
WALDWICK	186.	26.	33.	15.	4.	5.
CINNAMINSON	118.	23.	32.	23.	0.	1.
PENNSAUKEN	137.	32.	16.	12.	1.	4.
MONTCLAIR	260.	40.	74.	17.	10.	11.
HAMILTON TWP.	301.	27.	10.	19.	7.	6.
LONG BRANCH	202.	80.	33.	15.	4.	3.
NEPTUNE TWP.	153.	59.	30.	27.	6.	2.
POMPTON LAKES	147.	29.	40.	18.	4.	3.

HIGH SES SUBURBAN COMMUNITIES

ENGLEWOOD CLIFFS	319.	49.	102.	42.	4.	11.
MOORESTOWN	227.	50.	44.	26.	1.	11.
MILLBURN	368.	64.	105.	37.	5.	18.
CHATHAM BORO	201.	23.	46.	32.	2.	5.
PEQUANNOCK	94.	28.	25.	18.	11.	11.
MONTGOMERY	197.	41.	24.	32.	6.	4.
NEW PROVIDENCE	206.	32.	38.	21.	2.	6.
WESTFIELD	191.	27.	54.	14.	3.	18.

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*Total expenditures includes debt service, employee benefits, and miscellaneous other expenditures.

TABLE 2 (con't.)

PER CAPITA MUNICIPAL EXPENDITURES FOR SELECTED CATEGORIES, 1974

RURAL COMMUNITIES

MUNICIPALITY	*TOTAL EXPENDITURES	GENERAL GOVERNMENT	PUBLIC SAFETY	STREETS & ROADS	HELATH & WELFARE	RECREATION
DENNIS TWP.	161.	34.	6.	18.	5.	0.
MIDDLE TWP.	186.	46.	42.	26.	3.	1.
MILLVILLE	201.	55.	55.	27.	4.	0.
WASHINGTON TWP.	186.	47.	27.	38.	3.	0.
PLUMSTED	78.	16.	9.	4.	3.	1.
PITTSGROVE	92.	23.	1.	14.	1.	0.
UPPER PITTSGROVE TWP.	88.	13.	5.	17.	2.	0.
BEDMINSTER	278.	74.	29.	57.	8.	2.
NEWTON	157.	30.	45.	14.	2.	5.
BELVIDERE	178.	37.	34.	33.	2.	2.

*Total expenditures includes debt service, employee benefits, and miscellaneous other expenditures.

The first thing to note is the wide range of per capita expenditures. Total expenditures in urban-aid cities range from $127 to $630, and from $78 to $620 in non-urban-aid cities. In both groups, ocean resorts spend significantly more than other municipalities. In our sample Atlantic City, Ocean City and Wildwood Crest spend more in nearly every expenditure category than other places in the sample. General government, public safety and recreation expenditures are particularly high in the three beach communities.

As might has been expected, expenditures in Newark are very high in most categories. Also, the higher SES urban communities in general spend considerably less than the low SES urban communities that make up the majority of the urban-aid group. On average the communities in the high SES suburban group show a high level of municipal expenditures, significantly higher than the average level in the higher SES urban communities. In relative terms, expenditures on police and recreation are particularly high in the high SES suburban communities. Finally, although there is significant variation in expenditure levels among rural communities, they, as expected, tend to spend relatively little on municipal functions.

Although the expenditure data present an interesting picture of the patterns of local government activity in New Jersey, they are not a good index of municipal overburden. High per capita expenditures do not necessarily indicate a high degree of burden. Some communities with a high level of spending are the recipients of significant grants-in-aid--resources for which they must exert little direct effort. Alternatively, a very wealthy community can spend significant amounts without exerting much effort. By looking only at expenditure levels we may be unable to distinguish between a rich community with a strong taste for public goods and a poor community

with significant fiscal needs. For example, let us compare Phillipsburg, an urban-aid city with a relatively low per capita equalized value of $8064 and per capita income equal to $3562, to Englewood Cliffs, a rich suburb whose per capita equalized value and personal income equal $45161 and $7983, respectively. We find that Englewood Cliffs, the more suburban of the two communities, spends more than twice as much as Phillipsburg, $319 as compared to $145.

In New Jersey county governments provide most welfare services, many health, court and penal services. As these are county-wide services, there is no way of knowing how county expenditures are allocated within a county. Because of this ignorance we are forced to calculate county per capita expenditures and assume implicitly that the county budget is allocated to the component jurisdictions proportionally to the distribution of population within the county. A comparison of non-educational expenditures in New Jersey municipalities that ignores county expenditures would be seriously biased because of the wide range of county per capita expenditure levels, from $81 to $184.

Table 3 lists the total of municipal plus county per capita expenditures. In general the addition of county expenditures widens the disparity of expenditure levels among communities, as cities with high levels of expenditures tend to be located in high expenditure counties and vice versa.

On the other side of the fiscal ledger are the taxes levied by local governments. Table 4 presents data on per capita taxes for municipal purposes and data on non-tax locally raised revenues for the communities in our sample. Taxes include primarily property taxes, but also any other taxes levied by New Jersey municipalities, such as the gross receipts tax, or franchise tax. Non-tax local revenues include licenses, user fees, permits

TABLE 3

PER CAPITA MUNICIPAL AND COUNTY EXPENDITURES, 1974

Municipality	Per capita municipal expenditures	Per capita County expenditures	Per capita total expenditures
ATLANTIC CITY	630.06	134.74	764.80
ENGLEWOOD CLIFFS	319.41	92.07	411.48
FORT LEE	198.28	92.07	290.35
LITTLE FERRY	169.94	92.07	262.01
MOONACHIE	333.02	92.07	425.09
NEW MILFORD	127.96	92.07	220.03
WALDWICK	185.93	92.07	278.00
CINNAMINSON	117.85	81.99	199.84
FLORENCE	132.14	81.99	214.13
MOORESTOWN	227.07	81.99	309.06
CAMDEN CITY	299.22	121.08	420.30
LAUREL SPRINGS	102.25	121.08	223.33
PENNSAUKEN	136.82	121.08	257.90
DENNIS TWP	161.07	184.32	345.39
MIDDLE TWP	185.54	184.32	369.86
OCEAN CITY	606.63	184.32	790.95
WILDWOOD CREST	619.62	184.32	803.94
BRIDGETON	181.52	130.18	311.70
MILLVILLE	201.49	130.18	331.67
VINELAND	196.66	130.18	326.84
EAST ORANGE	418.15	160.10	578.25
IRVINGTON	126.65	160.10	286.75
MILLBURN	368.02	160.10	528.12
MONTCLAIR	260.18	160.10	420.28
NEWARK	504.92	160.10	665.02
ORANGE	326.31	160.10	486.41
WASHINGTON TWP (Gloucester Co.)	124.51	80.94	205.45
BAYONNE	254.45	120.90	375.35
HOBOKEN	314.85	120.90	435.75
JERSEY CITY	248.78	120.90	369.68
NORTH BERGEN	262.47	120.90	383.37
UNION CITY	135.92	120.90	256.82
WEST NEW YORK	154.06	120.90	274.96
HAMILTON TWP	301.41	129.86	431.27
TRENTON	337.98	129.86	467.84
WASHINGTON TWP (Mercer Co.)	185.58	129.86	315.44
NEW BRUNSWICK	247.76	102.17	349.93
PERTH AMBOY	264.18	102.17	366.35
SAYREVILLE	193.56	102.17	295.73
ASBURY PARK	403.81	94.89	498.70
LONG BRANCH	201.50	94.89	296.39

TABLE 3 (cont.)

Municipality	Per capita municipal expenditures	Per capita county expenditures	Per capita total expenditures
NEPTUNE TWP	152.79	94.89	247.68
CHATHAM BORO	200.91	92.23	293.14
PEQUANNOCK	93.85	92.23	186.08
LAKEWOOD	215.04	105.09	320.13
PLUMSTED	77.91	105.09	183.00
CLIFTON	205.39	91.79	297.18
PASSAIC CITY	234.76	91.79	326.55
PATERSON	269.70	91.79	361.48
POMPTON LAKES	146.96	91.79	238.75
PITTSGROVE	92.27	123.77	216.04
UPPER PITTSGROVE TWP	88.16	123.77	211.93
BEDMINSTER	277.69	93.55	371.24
MONTGOMERY	196.81	93.55	290.36
NEWTON	157.10	166.23	323.33
ELIZABETH	159.52	85.83	245.35
HILLSIDE	245.41	85.83	331.24
NEW PROVIDENCE	206.15	85.83	291.98
PLAINFIELD	321.22	85.83	407.05
WESTFIELD	190.71	85.83	276.54
BELVIDERE	177.85	105.56	283.41
PHILLIPSBURG	144.82	105.56	250.38

TABLE 4

Municipal Taxes, Fees and Permits, Fiscal Capacity and Revenue Effort, 1974

(All data in per capita terms)

Low SES Urban Communities

Municipality	Municipal Taxes	Fees, Permits, etc.	Fees, Permits, / Taxes	Personal Income	Equalized Value	Taxes+Fees / Income	Taxes+Fees / Eq. Value
ATLANTIC CITY	509.	32.	0.063	3216.	8142.	0.1684	0.0665
LITTLE FERRY	130.	8.	0.058	5083.	15288.	0.0271	0.0090
MOONACHIE	215.	17.	0.078	3991.	45369.	0.0581	0.0051
CAMDEN CITY	156.	12.	0.076	2920.	3999.	0.0573	0.0418
BRIDGETON	117.	9.	0.078	3363.	4785.	0.0376	0.0264
VINELAND	111.	13.	0.116	3580.	9697.	0.0345	0.0127
EAST ORANGE	317.	17.	0.053	4565.	5956.	0.0732	0.0561
IRVINGTON	42.	14.	0.340	4361.	7211.	0.0129	0.0078
NEWARK	295.	33.	0.110	2964.	4272.	0.1105	0.0767
ORANGE	234.	13.	0.057	4155.	5405.	0.0595	0.0458
BAYONNE	204.	8.	0.039	4276.	9038.	0.0497	0.0235
HOBOKEN	218.	9.	0.042	3150.	4049.	0.0723	0.0562
JERSEY CITY	120.	27.	0.223	3691.	4794,	0.0398	0.0307
NORTH BERGEN	203.	7.	0.037	4427.	12986.	0.0476	0.0162
UNION CITY	56.	8.	0.137	3660.	5391.	0.0175	0.0119
WEST NEW YORK	71.	9.	0.121	4067.	5673.	0.0195	0.0140
TRENTON	191.	15.	0.080	3212.	4343.	0.0641	0.0474
NEW BRUNSWICK	162.	37.	0.229	4066.	8373.	0.0490	0.0238
PERTH AMBOY	144.	15.	0.102	3652.	9288.	0.0435	0.0171
ASBURY PARK	272.	32.	0.117	3216.	7043.	0.0944	0.0431
LAKEWOOD	144.	5.	0.038	3936.	12725.	0.0379	0.0117
CLIFTON	143.	6.	0.045	5040.	15416.	0.0296	0.0097
PASSAIC CITY	166.	15.	0.088	3739.	6378.	0.0483	0.0283
PATERSON	152.	19.	0.122	3321.	5402.	0.0515	0.0317
ELIZABETH	64.	14.	0.218	4164.	8034.	0.0189	0.0098
HILLSIDE	215.	6.	0.028	4837.	13152.	0.0458	0.0168
PLAINFIELD	176.	17.	0.095	4277.	8150.	0.0450	0.0236
PHILLIPSBURG	55.	15.	0.269	3562.	8064.	0.0196	0.0087

TABLE 4 (cont.)

Moderate and High SES Urban Committees

Municipality	Municipal Taxes	Fees, Permits, etc.	Fees, Permits, / Taxes	Personal Income	Equalized Value	Taxes+Fees / Income	Taxes+Fees / Eq. Value
FORT LEE	166.	13.	0.080	7767.	23442.	0.0231	0.0076
NEW MILFORD	95.	2.	0.022	5041.	11624.	0.0194	0.0084
WALDWICK	138.	5.	0.033	4767.	12138.	0.0299	0.0117
CINNAMINSON	79.	12.	0.151	4572.	13851.	0.0200	0.0066
PENNSAUKEN	105.	5.	0.045	4041.	13411.	0.0270	0.0081
MONTCLAIR	174.	28.	0.162	6495.	11547.	0.0311	0.0175
HAMILTON TWP	166.	8.	0.050	4236.	10365.	0.0413	0.0169
LONG BRANCH	101.	19.	0.188	4209.	8674.	0.0286	0.0139
NEPTUNE TWP	48.	13.	0.267	3717.	10162.	0.0162	0.0059
POMPTON LAKES	101.	7.	0.065	4580.	12394.	0.0235	0.0087

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Low and Moderate SES Suburban Communities

Municipality	Municipal Taxes	Fees, Permits, etc.	Fees, Permits, / Taxes	Personal Income	Equalized Value	Taxes+Fees / Income	Taxes+Fees / Eq. Value
FLORENCE	103.	6.	0.061	3926.	14239.	0.0277	0.0077
LAUREL SPRINGS	61.	2.	0.030	3962.	8570.	0.0159	0.0074
OCEAN CITY	505.	38.	0.076	5006.	47969.	0.1086	0.0113
WILDWOOD CREST	461.	52.	0.112	5164.	47428.	0.0993	0.0108
WASHINGTON TWP	70.	12.	0.178	3987.	13923.	0.0207	0.0059
SAYREVILLE	122.	9.	0.074	4154.	14837.	0.0316	0.0088

TABLE 4 (cont.)

High SES Suburban Communities

Municipality	Municipal Taxes	Fees, Permits, etc.	Fees, Permits, / Taxes	Personal Income	Equalized Value	Taxes+Fees / Income	Taxes+Fees / Eq. Value
ENGLEWOOD CLIFFS	260.	11.	0.042	7983.	45161.	0.0339	0.0060
MOORESTOWN	142.	21.	0.150	5917.	16148.	0.0276	0.0090
MILLBURN	251.	15.	0.060	10861.	25720.	0.0245	0.0104
CHATHAM BORO	118.	6.	0.050	6018.	16994.	0.0205	0.0073
PEQUANNOCK	32.	12.	0.387	4671.	14157.	0.0095	0.0031
MONTGOMERY	92.	22.	0.241	4801.	20956.	0.0239	0.0055
NEW PROVIDENCE	149.	8.	0.054	5728.	18345.	0.0274	0.0086
WESTFIELD	110.	27.	0.243	6580.	15837.	0.0208	0.0086

Rural Communities

Municipality	Municipal Taxes	Fees, Permits, etc.	Fees, Permits, / Taxes	Personal Income	Equalized Value	Taxes+Fees / Income	Taxes+Fees / Eq. Value
DENNIS TWP	72.	0.	0.000	3176.	13216.	0.0227	0.0055
MIDDLE TWP	121.	5.	0.045	3377.	14177.	0.0374	0.0089
MILLVILLE	132.	5.	0.035	3713.	8243.	0.0368	0.0166
WASHINGTON TWP	112.	21.	0.185	4368.	17171.	0.0304	0.0077
PLUMSTED	31.	9.	0.299	2979.	8148.	0.0134	0.0049
PITTSGROVE	45.	4.	0.085	3166.	7766.	0.0154	0.0063
UPPER PITTSGROVE	56.	5.	0.091	3282.	8768.	0.0186	0.0070
BEDMINSTER	181.	4.	0.023	9432.	38696.	0.0197	0.0048
NEWTON	103.	12.	0.117	3906.	10119.	0.0294	0.0114
BELVIDERE	113.	2.	0.022	4203.	13123.	0.0275	0.0088

and fines. The third column of the table is the ratio of these non-tax revenues to taxes. It indicates the proportion of locally raised revenues that comes from non-tax sources. By observing the values of this ratio, it is clear that there is a considerable variation in the importance of user fees and permits, etc. in New Jersey local governments. This variation in the role of non-tax revenues points out the danger of drawing conclusions about burdens from a comparative study of taxes levied. Two communities with identical taxes may face significantly different burdens if one also relies heavily on locally raised non-tax revenues.

The tax data presented in Table 4 indicates clearly the wide variation in both taxes and non-tax revenues among similarly categorized communities. For instance, among low SES urban places, per capita taxes range from $509 to $42, wider than the range of per capita expenditures. Note that the four beach communities in our sample, Atlantic City, Asbury Park, Wildwood Crest and Ocean City, all levy high per capita taxes. This is largely due to the fact that their permanent population (on which the per capita calculations are based,) is very small compared to the summer population, a population that is either directly or indirectly subject to local taxation.

The level of per capita local taxes, or for that matter, the per capita level of total locally raised revenues, makes for an inappropriate index of local burden. A burden or a tax revenue effort can only be defined in terms of taxes paid relative to some index of taxpaying ability. For instance, in communities with a high proportion of commercial or industrial tax base, high per capita tax collections can be associated with a very low tax rate. As an example, the town of Wildwood Crest collects per capita taxes of $461. This compares to the average per capita taxes of $144 for non-urban-aid communities

in our sample. In part because over 43 percent of its equalized valuation is from commercial-industrial property, Wildwood Crest can raise a very high level of tax revenues with the relatively low effective municipal tax rate of 0.83.

On the other hand, some communities which impose relatively low per capita taxes, have high municipal tax rates. For instance Jersey City collected $120 per person in taxes in 1974 (compared to an average of $182 for all urban-aid cities) but had a relatively high municipal purposes tax rate of 2.15.

An inherent difficulty in defining a tax or revenue effort index is choosing the appropriate fiscal base upon which to guage the degree of effort. The two primary candidates are equalized value per capita and personal income per capita. Both are alternative measures of a community's "fiscal capacity." There is a long, and still unresolved, debate in the literature concerning the best capacity measure.[6]

As the predominant local tax is the property tax, the property tax base, i.e., equalized value, is an obvious candidate as a measure of fiscal capacity. Alternatively, as all taxes on residents are ultimately paid out of income, personal income may serve as a reasonable base for an index of effort. Incidently, the formulas used to allocate general revenue sharing funds utilize an effort index with a personal income base.

The fourth and fifth columns of Table 4 present the above two fiscal capacity measures, per capita income and per capita equalized value, respectively.[7]

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[6] The debate continues over the correct conceptual meaning of the term fiscal capacity. A standard reference on fiscal capacity is ACIR [1]. Margolis, et. al. [19] present a comprehensive treatment of the conceptual issues. Akin [2] provides a more recent view.

[7] The income data is for 1972, and was estimated for the Office of Revenue Sharing. The equalized value data is for 1974.

By comparing these two indices it will be clear why any measure of burden is so dependent on which fiscal capacity index is chosen. Let us look at several examples. The town of Moonachie is a small industrial town. Its citizens are relatively poor in terms of income, but its equalized value places it among the very highest in the state. One very significant observation is that most of the largest communities in the state, Newark, Camden, Trenton, Jersey City and Paterson are among the lowest in the state in terms of both personal income and equalized value. This fact makes New Jersey different from many other states, where although average personal income is quite low within their largest cities, the value of property in these cities is quite high.

If we look at the eight communities classified as high income suburban, we note that they are relatively well-off in terms of both measures of fiscal capacity. However, among the rural communities are several, namely Plumsted and Pittsgrove, that have very low average incomes, but moderate equalized values.

In the last two columns of Table 4 we have calculated two measures of revenue burden or effort: municipal taxes plus fees, etc. divided by personal income, and alternatively, by equalized value. We can observe that some communities that are bearing a relatively high burden under the first measure, are not doing so under the second measure, and vice versa. The disparity is primarily due to the divergence between the capacity measures.

We are now in a position to assess the measures of overburden that are found most often in the literature, namely the comparison of school to non-school taxes or to total taxes. The argument is that those communities that spend a significant share of their total tax revenues on non-school functions are suffering a municipal overburden as compared to communities where a large

proportion of total taxes go towards funding schools. In general, it has been found that central cities spend a significantly smaller proportion of total revenues on schools than do their suburbs. Table 5 presents data to allow us to make similar assessments for our New Jersey sample. We have calculated three alternative measures: municipal taxes as a proportion of school taxes, the sum of municipal taxes and user fees and permits as a proportion of school taxes, and the school equalized tax rate as a proportion of the total equalized tax rate. The averages in Table 5 are weighted by the population of each municipality. Our sample includes only six communities categorized as low or moderate income, suburban. Of the six, two, Ocean City and Wildwood Crest, because of their special status as beach resorts, reveal fiscal behavior that is way out of line with the other communities similarly categorized. Thus averages have been calculated excluding these two communities. Likewise, Millville's fiscal behavior is different from the other communities characterized as rural, and averages have been calculated excluding it. Millville, although characterized as a rural center, is an urban-aid city, explaining in part its divergent behavior.

The averages in Table 5 show a clear pattern. Urban-aid cities tax themselves for municipal functions more heavily than for schools than do non-urban-aid communities. The lower a community's average status or income, and the more urban a community is, the larger the proportion of its taxes that goes to non-school functions. The first two ratios ignore non-school functions provided by county governments. By looking at the school tax rate as a proportion of the total tax rate (school + municipal + county), we include county government. The above pattern however is reinforced. Non-school functions require a larger share of the total tax burden, the more urban and the lower

TABLE 5

Three Indices of Municipal Overburden:

Averages for Selected Community Types

Community Type	Per Capita Municipal Taxes (Tm)	Per Capita Own-Raised Municipal Revenues (ORRm)	Per Capita School Taxes (Ts)	Tm/Ts	ORRm/Ts	School Tax Rate / Total Tax Rate
Urban Aid	182	201	130	1.54	1.70	0.43
Non-Urban-Aid	144	155	242	0.65	0.70	0.60
Low SES Urban	184	204	127	1.56	1.73	0.42
Mod. & High SES Urban	130	142	233	0.61	0.66	0.60
Low & Moderate SES Suburban	(178)	(194)	(245)	(0.73)	(0.79)	(0.61)
Minus Ocean City & Wildwood Crest	102	111	271	0.44	0.47	0.70
High SES Suburban	141	158	347	0.40	0.45	0.63
Rural	(107)	(113)	(195)	(0.62)	(0.65)	(0.60)
Minus Millville	94	101	235	0.39	0.41	0.69

the income of the community.

As often is the case, relying on averages alone can be deceptive. As shown in Table 6, the data for individual communities in our sample shows considerable variation. To the right of each of the three ratios is their rank in the sample, from lowest to highest. The ratios are deficient as indices of municipal overburden because they are unable to control for variations in the level of public services provided. For example, two low income urban-aid cities, Elizabeth and Phillipsburg, have ratios of municipal to school taxes of .41 and .37 respectively. These compare to values of the same ratio of .60 and .74 for Englewood Cliffs and Millburn. These two suburban communities have the highest per capita income of all communities in our sample, and among the highest levels in the state. Surely these two communities are not municipally overburdened.

The difficulty with these indices, and all others that have been considered, suggests that an adequate index has not been found. In the next section, we will discuss how one can construct an index of overburden that overcomes some of the shortcomings of the alternative measures.

IV.

Assume that the local government in municipality i spends L_i dollars per capita, annually, on providing g_i units per capita of a given public service, at a cost per unit of p_i. Thus

$$L_i = p_i g_i \quad .$$

g_i is a measure of output of the local government. It produces a direct benefit for the residents. For instance, the output of a police department might be

TABLE 6

Three Indices of Municipal Overburden

(All data in per capita terms)

Low SES Urban Communities

Municipality	Municipal Taxes (Tm)	Own-Raised Revenues (ORRm)	School Taxes (Ts)	Tm/Ts	Rank	ORRm / Ts	Rank	School Tax Rate / Total Tax Rate	Rank
ATLANTIC CITY	509.	542.	107.	4.78	62	5.08	62	0.2282	1
LITTLE FERRY	130.	138.	188.	0.69	36	0.73	35	0.5694	37
MOONACHIE	215.	232.	367.	0.59	32	0.63	32	0.5704	38
CAMDEN CITY	156.	167.	81.	1.92	56	2.06	56	0.3587	8
BRIDGETON	117.	126.	94.	1.24	48	1.34	47	0.4487	19
VINELAND	111.	124.	147.	0.75	38	0.84	39	0.4663	21
EAST ORANGE	317.	334.	147.	2.17	59	2.28	58	0.3187	3
IRVINGTON	42.	56.	143.	0.29	8	0.39	12	0.4024	12
NEWARK	295.	328.	112.	2.64	61	2.93	61	0.4316	16
ORANGE	234.	247.	138.	1.69	55	1.79	54	0.3441	7
BAYONNE	204.	213.	156.	1.31	49	1.36	48	0.3870	11
HOBOKEN	218.	228.	95.	2.30	60	2.40	60	0.3223	4
JERSEY CITY	120.	147.	103.	1.17	47	1.43	49	0.3761	10
NORTH BERGEN	203.	211.	147.	1.38	51	1.44	50	0.3645	9
UNION CITY	56.	64.	128.	0.44	24	0.50	25	0.4438	18
WEST NEW YORK	71.	79.	142.	0.50	27	0.56	27	0.4075	14
TRENTON	191.	206.	89.	2.14	58	2.31	59	0.3411	6
NEW BRUNSWICK	162.	199.	164.	0.99	44	1.21	46	0.5648	36
PERTH AMBOY	144.	159.	180.	0.80	40	0.88	40	0.5272	32
ASBURY PARK	272.	304.	163.	1.67	54	1.87	55	0.4231	15
LAKEWOOD	144.	149.	248.	0.58	31	0.60	30	0.6500	44
CLIFTON	143.	149.	142.	1.01	45	1.05	44	0.4600	20
PASSAIC CITY	166.	181.	120.	1.39	52	1.51	51	0.5000	24
PATERSON	152.	171.	110.	1.38	50	1.55	52	0.4733	23
ELIZABETH	64.	79.	157.	0.41	20	0.50	24	0.5026	25
HILLSIDE	215.	222.	230.	0.94	43	0.96	42	0.5271	31
PLAINFIELD	176.	193.	194.	0.91	42	0.99	43	0.5174	29
PHILLIPSBURG	55.	70.	149.	0.37	15	0.47	22	0.5197	30

TABLE 6 (cont.)

Moderate and High SES Urban Communities

Municipality	Municipal Taxes (Tm)	Own-Raised Revenues (ORRm)	School Taxes (Ts)	Tm/Ts	Rank	ORRm / Ts	Rank	School Tax Rate / Total Tax Rate	Rank
FORT LEE	166.	179.	218.	0.76	39	0.82	38	0.5110	28
NEW MILFORD	95.	98.	245.	0.39	17	0.40	13	0.6741	47
WALDWICK	138.	142.	325.	0.42	21	0.44	18	0.7090	54
CINNAMINSON	79.	91.	301.	0.26	6	0.30	5	0.7209	57
PENNSAUKEN	105.	109.	197.	0.53	28	0.55	26	0.5506	33
MONTCLAIR	174.	202.	260.	0.67	35	0.78	36	0.4697	22
HAMILTON TWP	166.	175.	187.	0.89	41	0.94	41	0.6429	42
LONG BRANCH	101.	120.	186.	0.54	29	0.64	33	0.6272	41
NEPTUNE TWP	48.	60.	201.	0.24	4	0.30	4	0.5879	39
POMPTON LAKES	101.	107.	330.	0.31	9	0.33	9	0.7093	55

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Low and Moderate SES Suburban Communities

Municipality	Municipal Taxes (Tm)	Own-Raised Revenues (ORRm)	School Taxes (Ts)	Tm/Ts	Rank	ORRm / Ts	Rank	School Tax Rate / Total Tax Rate	Rank
FLORENCE	103.	109.	234.	0.44	23	0.47	21	0.6833	49
LAUREL SPRINGS	61.	63.	130.	0.47	25	0.48	23	0.5050	26
OCEAN CITY	505.	544.	245.	2.07	57	2.22	57	0.2833	2
WILDWOOD CREST	461.	513.	294.	1.57	53	1.74	53	0.3246	5
WASHINGTON TWP	70.	82.	302.	0.23	3	0.27	2	0.7331	58
SAYREVILLE	122.	131.	224.	0.55	30	0.59	28	0.6864	51

TABLE 6 (cont.)

High SES Suburban Communities

Municipality	Municipal Taxes (Tm)	Own-Raised Revenues (ORRm)	School Taxes (Ts)	Tm/Ts	Rank	ORRm / Ts	Rank	School Tax Rate / Total Tax Rate	Rank
ENGLEWOOD CLIFFS	260.	271.	434.	0.60	33	0.62	31	0.5517	34
MOORESTOWN	142.	163.	396.	0.36	14	0.41	15	0.6834	50
MILLBURN	251.	266.	340.	0.74	37	0.78	37	0.4371	17
CHATHAM BORO	118.	124.	340.	0.35	11	0.36	10	0.6780	48
PEQUANNOCK	32.	44.	306.	0.10	1	0.14	1	0.7059	53
MONTGOMERY	92.	115.	413.	0.22	2	0.28	3	0.7665	60
NEW PROVIDENCE	149.	157.	372.	0.40	18	0.42	16	0.6444	43
WESTFIELD	110.	137.	310.	0.35	13	0.44	19	0.6577	45

Rural Communities

Municipality	Municipal Taxes (Tm)	Own-Raised Revenues (ORRm)	School Taxes (Ts)	Tm/Ts	Rank	ORRm / Ts	Rank	School Tax Rate / Total Tax Rate	Rank
DENNIS TWP	72.	72.	229.	0.32	10	0.32	8	0.7756	61
MIDDLE TWP	121.	126.	316.	0.38	16	0.40	14	0.8051	62
MILLVILLE	132.	136.	126.	1.05	46	1.08	45	0.4069	13
WASHINGTON TWP	112.	133.	227.	0.50	26	0.59	29	0.5593	35
PLUMSTED	31.	40.	128.	0.24	5	0.31	6	0.7548	59
PITTSGROVE	45.	49.	155.	0.29	7	0.31	7	0.7194	56
UPPER PITTSGROVE	56.	61.	159.	0.35	12	0.38	11	0.6679	46
BEDMINSTER	181.	186.	290.	0.63	34	0.64	34	0.5102	27
NEWTON	103.	115.	252.	0.41	19	0.46	20	0.6936	52
BELVIDERE	113.	116.	265.	0.43	22	0.44	17	0.6235	40

measured in terms of a reduction in the probability of a given type of crime occuring. The output of a city health department might be a reduction in the probability of certain kinds of epidemics, or a reduction in morbidity rates for certain diseases.[8]

From Table 2 we saw that the level of per capita expenditures varies significantly among New Jersey communities. In order to explore the meaning of overburden we must ask why the level of expenditures varies. From the above equation, we see that variations in expenditure must either be due to variations in the level of output, g, or in the cost per unit of output. We will consider variations in g_1 first.

As with commodities produced in the private sector, supply and demand conditions play a role in determining the level of public sector output. A crucial difference between the public and private sectors is that individuals express their demands for public goods and services indirectly, through their political representatives, rather than directly at the marketplace. The question of how individual demands for local public goods get articulated is beyond the realm of our concern here.[9] However we are interested in determining the primary factors that effect the realized level of demand for public services in various communities.

The major factors affecting public good demand can be split into three

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[8] It should be clear from these examples that measures of public sector output can be elusive. For instance, there is a large literature that attempts to define the output of schooling, but no clear consensus has arisen. Despite severe conceptual and empirical difficulties in defining public sector output, the concept is crucial for our understanding of local public finance.

[9] For a discussion of several models of demand articulation in the context of local governments see Steiner [22] and Downs [9].

groups. First, demand is in part a function of ability to pay. The higher a community's ability to pay, or fiscal capacity, the higher its demand for public goods, g_i. It should be noted that a community's ability to pay is a function not only of its tax base, but the value of grants it receives from other governments. The second factor that affects the demand for public goods are legal requirements or standards that mandate that certain levels of service be provided. For example, schools are required to meet a minimum number of days and offer a certain minimum set of courses.

The demand for g is also a function of certain characteristics of individual jurisdictions. For instance, the externalities and the technical problems caused by high levels of population density result in increased levels of demand for public goods, for example, municipally provided fire protection instead of relying on volunteers.

Finally, the demand for public goods is affected by tastes for public goods. Depending on the degrees of responsiveness of local government to its citizens' preferences, the relevant taste may be the collective tastes of the citizenry, or the tastes of the political leaders.

In order to complete our outline of the economics of local government, we must turn to the supply side for locally provided public goods. We will attempt to determine why costs for providing a single unit of public good, g_i, differ across communities. In terms of our previous notation, why is p, the cost of providing a unit of g, higher in some jurisdictions? Understanding these cost differences is essential for understanding the causes of municipal overburden.

In each community, the production or supply of g_i depends on X_i, the "facilities" available for the production of g_i, and N_i, the population of the community. The term facilities refers to a combination of inputs, labor,

land and capital necessary to produce public output g_i.[10] The facilities for safer streets, the output of a police department, might be a given number of police patrols. Each patrol requires a couple of policemen, a police car, gasoline, and a communications network. Similarly, the facilities necessary to produce educated children include teachers, classrooms, and books.

Most services provided by local governments are at least to some extent "public goods" in the economist's sense of the word. A public or quasi-public good is one where my consumption of the good will not prevent your consumption of the same good. For example, a policeman by patrolling in front of my house, by his very presence, assures that my neighbor's house will be safer. My enjoyment of a municipal park is not diminished by the use of the park by other residents of the community (at least until the park becomes crowded).

We can thus summarize the production of local public goods by the following functional relationship:

$$g_i = F(X_i, N_i) \quad .$$

With a constant population of N_i, an increase in facilities, X_i, will increase local government output g_i. If the facility size is held constant, an increase in population will decrease the flow of services. The rate of decrease depends on how "public" a particular service is, and the relative amount of crowdedness present. For instance, an extra person in a nearly empty municipal swimming pool may not reduce the other swimmers' enjoyment of the pool at all. However, an extra swimmer, when the pool is nearing capacity, can have a significant

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[10] The term capital is a shorthand for buildings, roads, automobiles, fire engines, etc.

impact on other swimmers' enjoyment.

With the above framework before us, we are now in a position to indicate the reasons why the costs of a unit of public service differ across communities. We will consider three major reasons. First, let us consider the costs of providing facilities for the production of g. Facilities are produced by combining factor inputs such as capital (K) and labor (L). Thus, we can express

$$X = f(K, L) \quad .$$

If w and r are used to denote the average wage rate and interest rate (or cost of capital), then C(X), the cost of X, is a function of K, L, r, and w.

The first reason for costs to vary is variation in factor prices, r and w, among communities. In general wages of municipal and school employees tend to be higher in the larger, more urban communities. In most cases, workers in larger jurisdictions are all unionized, and the unions tend to be larger and often stronger than smaller suburban locals. In a number of cases, higher wages are necessary to attract labor to work in the larger cities. This is particularly true for teachers, who usually demand more pay to work in the more "difficult conditions" of urban schools.

It is more difficult to generalize about variations in capital costs. On the one hand, larger jurisdictions tend to have easier access to national capital markets than small, generally unknown jurisdictions. On the other hand, the fiscal problems that have beset some of New Jersey's larger urban centers, such as Newark and Trenton, have made it more expensive for them to borrow necessary capital funds.

The second factor that affects the costs of providing a unit of g concerns the size of facilities necessary to produce g. There are several reasons why

the relationship between g and X should vary among communities. First, labor and capital can be used more or less efficiently in the production of g. It is hard to generalize about whether local government is more efficient in small or large jurisdictions. Second, is the issue of scale economies. For some public services, higher density of development reduces facility requirements per unit of g. For instance, less time and gasoline is required to collect garbage where it is not necessary to drive long distances between houses. On the other hand, higher density and the resulting high rise buildings probably increase facility requirements for fire fighting (i.e., requiring hook and ladder trucks). Finally, a number of conditions tend to be associated with urbanization and high density development, such as higher crime rates. High crime necessitates, in turn, more police facilities in order to receive a given degree of safety.

The third factor that affects the cost of a unit of g is the variation in size and composition of population of communities. In a dense highly populated community, an extra person may reduce the average level of g to a much greater extent than an extra person in a small rural or suburban community. The consequence of this is that a greater increase in facility size, and hence costs, are necessary in a larger community in order to maintain a constant level of output. The composition of population can also have an impact on costs. For example, there is significant evidence that more educational resources are needed to provide a given quality of education to children from poor families than to middle class children.[11] Hence, an increase in the proportion of poor children in a community will increase costs if education "output" is to be

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[11] See Coleman [7] and Jencks [15].

maintained.

We are now in a position, after having traced the reasons for variation in local government expenditures, to develop our preferred measures of municipal overburden. In criticizing measures of overburden found in the literature, our primary objection has been to the absence of a standard or reference point. The whole concept of overburden is a concept of relative burden, one community has a burden over and above that of another community. In order to have a comparative or relative measure of burden we thus need a numeraire, in other words, a way of guaranteeing that we are making a valid comparison.

In Table 4 we presented two measures of revenue effort: locally raised revenues, divided by equalized value, and by personal income. The difficulty in interpreting these indices of effort as measures of burden is that we do not know what the effort is buying. If one community exerts twice as much effort as another, but receives for its large effort five times as many public services as the other community, we may not want to conclude that the high effort community is more overburdened than the low effort place. This suggests that we want to compute the effort each community exerts per unit of public service, g_i, received. This ratio is commonly called a tax-price.

A tax-price allows us to compare the effort communities must exert to provide identical public services. If a certain set of communities, perhaps large cities, must exert significantly higher effort to provide a common level of services, we would argue that these communities are suffering an inequity and are overburdened.

It is important to recognize that this ratio is a measure of the price a local government is facing in providing public services. The tax-price measure provides us with one dimension of the overburden issue. By comparing tax-prices

we know the burden a municipality must face to provide a unit of public service, but we do not know how much effort they are currently exerting. For instance, a very poor rural community might be facing a very high tax-price. Thus, a high tax effort is required if it wants to provide a unit of public service, but it may choose to provide almost no public services, and hence in fact, face a low tax effort.

We have therefore developed another index of municipal overburden that measures the effort necessary for a local government to provide a required or "minimum bundle" of public services. In other words, this index measures the tax burden of providing a minimum bundle of public services. We believe that this minimum bundle index provides a consistent measure of municipal overburden. Before discussing this measure in detail, it will be helpful to return to the initial concept of tax-price, and suggest how one could actually measure tax-prices.

Assume that community i spends for municipal purposes L_i dollars a year. As by New Jersey law, current expenses must be paid out of current revenues, L_i must by definition be equal to own-raised revenues and grants-in-aid from the state or federal governments. Thus we can write the budget identity as:

$$L_i \equiv T_i(1 + m_i) + Z_i$$

where T_i equals own-raised revenues (taxes plus fees, etc.), and m_i equals the average matching rate (grant/local contribution) for any matching grants received, and Z_i equals the per capita amount of all non-matching aid. Consistent with our previous usage, effort is defined as T_i/Y_i where Y_i is a a measure of fiscal capacity; either per capita equalized value or personal income.

Recalling that $L_i = p_i g_i$, we can define tax-price in community i as

$$\frac{T_i/Y_i}{g_i} = \frac{T_i/Y_i}{L_i/p_i} = \frac{\frac{T_i/Y_i}{T_i(1 + m_i) + Z_i}}{P_i} .$$

It is obvious from the above expressions that variations in tax-prices are due to variations in fiscal capacity, grants, the price per unit of public good, and effort.

In order to calculate tax-prices, data on revenue, expenditures, and fiscal capacity are necessary and easily available. The problem is to calculate p_i. As g_i, public service output is very difficult to measure, the price per unit of output is also very difficult to directly measure. As we are interested in deriving a relative index, we will suggest a rough proxy for p_i, that we believe has some of the properties of the actual, unobserved p_i.

From our discussion above recall that p_i is proportional to the cost of facilities, X_i, for the production of g_i. The cost will be higher, the higher the factor prices, and the larger the facilities necessary to produce a given g. We have suggested that cities with high density, and with a high proportion of poor, may face both higher factor prices and the requirements of a higher level of facilities per unit of g_i. We have thus defined a proxy measure of p that is proportional to population density and the proportion of low income residents in a community. It is interesting to note that the Fleischman Report ([10], Vol. I, p. 75) argues that municipal overburden is <u>caused</u> by high density and a high incidence of poverty.

Our <u>ad hoc</u> price index, denoted by p^* is constructed in such a way as to meet the following criteria. Any community from our sample with the median

density and median percentage of families below the poverty line in 1969, is assigned an index number equal to one. Positive percentage deviation from the medians lead to index values greater than one, while negative deviations result in index values less than one. Larger deviations have progressively smaller impacts on the value of the index. And finally, density and percentage below poverty weigh evenly in construction of the index. Our p* index meets all of these criteria, and takes the following form.

$$p^* = 1 + \alpha_1 \ln |\tilde{P}| + \alpha_2 \ln |\tilde{D}|$$

where $\tilde{P} = \dfrac{P_i - \bar{P}}{\bar{P}} \cdot 100$ $\qquad \bar{P}$ = Median % poor = 6.65

$\tilde{D} = \dfrac{D_i - \bar{D}}{\bar{D}} \cdot 100$ $\qquad \bar{D}$ = Median density = 3985

$\alpha_1 = .033$ if $\tilde{P} > 0$

$= -.033$ if $\tilde{P} < 0$

$\alpha_2 = .033$ if $\tilde{D} > 0$

$= -.033$ if $\tilde{D} < 0$.

Table 7 shows the average value of p* for various groups of cities in our sample. p* was then used to deflate municipal expenditures per capita, and to calculate two measures of tax-price, the first using equalized value as a measure of fiscal capacity, and the second using personal income. In order to make the tax-price measures more readable, the decimal places were moved four places to the right (multiplying by 10,000). The table clearly shows the pattern of higher tax-prices in the more urban communities. It is interesting to note that rural communities have on average relatively high tax-prices.

TABLE 7

Average Values for p* and Two Tax-Price Indices

Community Type	p*	Expenditure per capita/p*	Effort (w/Eq. Value) Exp./p*	Effort (w/Income) Exp./p*
Urban-Aid Cities	1.276	239	1.46	2.30
Non-Urban-Aid Cities	0.872	254	0.43	1.28
Low SES Urban	1.273	240	1.44	2.31
Moderate & High SES Urban	0.936	237	0.54	1.31
Low & Moderate SES Suburban	0.782	305	0.33	1.34
High SES Suburban	0.813	283	0.30	0.86
Rural	0.937	185	0.61	1.67

This is due to the low fiscal capacity of some rural communities and the lack of substantial grants-in-aid from the state or federal government.

Again average figures hide some interesting phenomena within classes of communities. Table 8 presents the same data as the previous table, for the communities in our sample. Both tax-price measures are ranked from lowest to highest.

We can observe that with the exception of two low density communities, Millville and Vineland, all the urban-aid cities have a price index p* greater than one. In interpreting the tax-price measure it is useful to look at their relative rankings. The higher the tax-price, the higher the ranking, and the greater the municipal overburden. With both tax-price measures the largest cities in the state are clearly overburdened. However, if we consider the group of 28 low SES urban cities as a whole we find a significant degree of variation. On one extreme, we have the industrial enclave Moonachie, which because of its large equalized value has the lowest tax-price of our entire sample. In addition smaller cities, Lakewood and Clifton, have relatively low tax-prices. When income is used as a fiscal base, the city of Irvington has a quite low tax-price.

If we turn our attention to the non-urban communities, we observe that several of them have reasonably high tax-prices, suggesting that local government fiscal problems are not the unique domain of large urban cities. Using the equalized value as fiscal base, Laurel Springs, Millville, Upper Pittsgrove and Newton have reasonably high tax-prices.

A major shortcoming of the tax-price measures presented in Table 8 is the relatively arbitrary nature of the construction of the price index p*. Although it is very useful in demonstrating what we have suggested is an

TABLE 8

p* and Two Tax-Price Indices

Low SES Urban Communities

Municipality	p*	Expenditure per capita/p*	Effort (w/Eq. Value) Exp./p*	Rank	Effort (w/Income) Exp./p*	Rank
ATLANTIC CITY	1.110	567.713	1.172	48	2.967	59
LITTLE FERRY	1.018	166.914	0.540	27	1.623	32
MOONACHIE	0.754	441.755	0.116	1	1.316	20
CAMDEN CITY	1.343	222.820	1.878	60	2.572	57
BRIDGETON	1.044	173.807	1.519	53	2.161	50
VINELAND	0.958	205.231	0.621	31	1.683	35
EAST ORANGE	1.300	321.635	1.744	57	2.275	51
IRVINGTON	1.131	111.944	0.695	37	1.149	11
NEWARK	1.362	370.717	2.068	61	2.981	60
ORANGE	1.324	246.370	1.857	58	2.416	53
BAYONNE	1.210	210.326	1.118	47	2.363	52
HOBOKEN	1.390	226.434	2.482	62	3.191	62
JERSEY CITY	1.328	187.320	1.638	56	2.127	42
NORTH BERGEN	1.063	246.863	0.657	32	1.927	44
UNION CITY	1.362	99.793	1.192	49	1.756	40
WEST NEW YORK	1.344	114.637	1.219	50	1.700	37
TRENTON	1.335	253.183	1.873	59	2.532	55
NEW BRUNSWICK	1.278	193.887	1.227	51	2.527	54
PERTH AMBOY	1.264	209.040	0.819	44	2.083	48
ASBURY PARK	1.341	301.085	1.431	52	3.135	61
LAKEWOOD	1.020	210.919	0.556	28	1.798	42
CLIFTON	1.015	202.259	0.478	24	1.463	24
PASSAIC CITY	1.334	175.993	1.610	55	2.746	58
PATERSON	1.343	200.857	1.576	54	2.563	56
ELIZABETH	1.273	125.326	0.780	42	1.505	26
HILLSIDE	1.046	234.531	0.718	39	1.953	45
PLAINFIELD	1.239	259.322	0.911	46	1.736	38
PHILLIPSBURG	1.106	130.905	0.662	33	1.499	25

TABLE 8 (cont.)

Moderate and High SES Urban Communities

Municipality	p*	Expenditure per capita/p*	Effort (w/Eq. Value) Exp./p*	Rank	Effort (w/Income) Exp./p*	Rank
FORT LEE	1.046	189.522	0.403	18	1.218	16
NEW MILFORD	1.031	124.124	0.677	35	1.560	28
WALDWICK	0.974	190.840	0.615	30	1.566	29
CINNAMINSON	0.760	155.109	0.425	20	1.288	19
PENNSAUKEN	0.810	168.930	0.482	25	1.592	31
MONTCLAIR	1.044	249.163	0.701	38	1.247	18
HAMILTON TWP	0.750	401.852	0.420	19	1.027	8
LONG BRANCH	1.265	159.344	0.870	45	1.794	41
NEPTUNE TWP	1.034	147.707	0.401	17	1.097	10
POMPTON LAKES	0.848	173.399	0.500	26	1.353	22

Low and Moderate SES Suburban Communities

Municipality	p*	Expenditure per capita/p*	Effort (w/Eq. Value) Exp./p*	Rank	Effort (w/Income) Exp./p*	Rank
FLORENCE	0.760	173.766	0.440	21	1.597	30
LAUREL SPRINGS	1.000	102.233	0.719	40	1.556	27
OCEAN CITY	0.940	645.617	0.176	5	1.683	36
WILDWOOD CREST	0.853	726.013	0.149	4	1.368	23
WASHINGTON TWP	0.737	168.977	0.350	14	1.223	17
SAYREVILLE	0.731	264.692	0.334	13	1.194	14

TABLE 8 (cont.)

High SES Suburban Communities

Municipality	p*	Expenditure per capita/p*	Effort (w/Eq. Value) Exp./p*	Rank	Effort (w/Income) Exp./p*	Rank
ENGLEWOOD CLIFFS	0.767	416.365	0.144	3	0.814	5
MOORESTOWN	0.718	316.083	0.285	10	0.873	7
MILLBURN	0.725	507.664	0.204	7	0.483	1
CHATHAM BORO	0.713	281.641	0.258	9	0.729	3
PEQUANNOCK	0.732	128.232	0.243	8	0.737	4
MONTGOMERY	0.711	276.916	0.197	6	0.862	6
NEW PROVIDENCE	0.875	235.571	0.363	15	1.164	12
WESTFIELD	0.978	195.013	0.443	22	1.067	9

Rural Communities

Municipality	p*	Expenditure per capita/p*	Effort (w/Eq. Value) Exp./p*	Rank	Effort (w/Income) Exp./p*	Rank
DENNIS TWP	0.956	168.503	0.324	12	1.347	21
MIDDLE TWP	0.987	187.975	0.474	23	1.969	46
MILLVILLE	0.954	211.208	0.784	43	1.740	39
WASHINGTON TWP	0.721	257.509	0.301	11	1.182	13
PLUMSTED	0.975	79.906	0.613	29	1.677	34
PITTSGROVE	0.980	94.150	0.666	34	1.635	33
UPPER PITTSGROVE	0.963	91.544	0.761	41	2.034	47
BEDMINSTER	0.803	345.650	0.139	2	0.569	2
NEWTON	0.960	163.697	0.694	36	1.798	43
BELVIDERE	0.777	228.873	0.385	16	1.201	15

appropriate way of measuring municipal overburden, we don't attempt to defend the particular manner in which p* was constructed. Its sole purpose was demonstrative. There is also one potentially serious conceptual error in the use of p*. Its use in deflating expenditures implicitly assumes that the price of a unit of public service, g, is constant for all g supplied. We suspect, for reasons discussed below, that this is not a good assumption. We will suggest an alternative method of calculating tax-prices that has the advantages of not requiring the use of the arbitrary p* index and not requiring that the price per unit of public service be held constant.

Based on our general conception of the economics of local governments that was outlined above, we believe that it is possible to conceptually separate all municipal expenditures into necessities, or required expenditures, and discretionary expenditures. An expenditure can be classified as required for two reasons: a legal requirement mandated by statute or by the courts, or expenditures necessitated by the provision of public services that are considered necessary by the standards of the time and of the region (defined for our purposes as the state). An extreme example involves the provision of municipal fire protection in large cities. By the standards of the 18th century, public fire protection was not considered a required service of municipal governments even in the largest cities, while today all large cities would consider it one of the basic required functions of local government.

We expect that local governments operate in many ways similar to individuals. There is significant evidence that low incomes are spent almost entirely on necessities, and that as an individual's income rises a smaller proportion is spent on necessities and a larger percentage on discretionary expenditures. It is likely that poor communities, which in New Jersey include

nearly all larger cities, will spend most of their revenues on necessities, or for non-discretionary purposes. Suburbs, on the other hand, will tend to spend more for discretionary purposes.

It is consistent with our understanding of the concept of overburden that a measure of overburden should refer to the burden created by the necessity of providing revenues for required, non-discretionary purposes. In other words, any overburden measure should not include the effort necessary to finance discretionary expenditures. Therefore we define an index of overburden as the revenue effort necessary to finance a community's "required" expenditures. We refer to this level of expenditures as the cost of providing a "minimum bundle" of services.[12]

The index of overburden can be expressed algebraically as:

$$(1) \qquad TP_{MB} = \frac{C_{MB} - Z}{Y(1 + M)} \quad , \text{ or}$$

$$(2) \qquad TP_{MB} = \frac{C_{MB} - Z - MG_{MB}}{Y}$$

where TP_{MB} = Tax effort necessary to finance the minimum bundle of services,

C_{MB} = The total costs of the minimum bundle,

Z = Total lump sum grants-in-aid,

Y = Fiscal capacity (per capita income or equalized value)

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[12] For a discussion of the concept of "minimum bundle" as applied to local governments, see Inman [14]. Le Grand [16] in developing a grants-in-aid formula to promote equity among local governments, employs an index that is quite similar to our overburden index.

M = Matching rate of grants programs,

MG_{MB} = Matching grants directly caused by expenditures on the minimum bundle,

$MG_{MB} = M(TP_{MB}) \cdot Y$.

In equation (1), the numerator of TP_{MB} is the total costs of the minimum bundle (C_{MB}) minus lump sum grants-in-aid. This reflects the amount of own-raised revenue needed to finance a minimally acceptable level of public services. This net cost is then divided by matching grant-enhanced local fiscal capacity ($Y(1 + M)$). Both the per capita personal income measure and per capita equalized valuation will be used as the local fiscal capacity measure in the denominator. The index can equivalently be written as C_{MB} minus all lump sum grants and matching grants that are awarded on the basis of own-raised expenses for the minimum bundle (Equation (2)).

Before the index can be computed, it is necessary to find a measure for C_{MB}. Minimum bundle expenditures, however, are not directly observable. It is not possible to separate out discretionary and non-discretionary expenses merely by looking at a local government budget.[13]

We do, however, have some idea of the determinants of local government's requirements. Evidence from research on determinants of local government expenditures indicate that large concentrations of poor families, high crime rates, and large populations are associated with large expenditure requirements.[14]

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[13] In some categories of local government expenditures, state governments and groups of "experts" do publicize or enforce minimal standards. For instance, the state mandates certain levels of welfare expenditures and the American Library Association has developed minimum standards of library services. Such standards, however, are not available for all categories of expenditures and local governments do not necessarily abide by standards suggested by professional associations.

[14] See Bahl [3] or Wilensky [23] for surveys of the vast literature on determinants of local government expenditures.

Independent of expenditure requirements, actual expenditures depend on the availability of sufficient fiscal resources. Hence a measure of fiscal capacity is an important determinant of actual expenditures.

Based on this knowledge, we were able to derive estimates of C_{MB}, the cost of a municipality's "minimum bundle" of services. Our estimation technique employs multiple linear regression analysis, a statistical procedure which can be used to weight various determinants of local government expenditure behavior. Multiple regression uses the actual values of the dependent variable, which is municipal expenditures in our case, and the values of the variables which explain variations in the dependent variable to determine the coefficients in a linear relationship between the independent variables and the dependent variable. If Y is the dependent variable and X_1, X_2, and X_3 are the "explainer" or "predictor" variables, the linear regression equation is written:

$$Y = a_0 + a_1X_1 + a_2X_2 + a_3X_3 \quad .$$

The result of the regression procedure is to find values of the weights, a_0 to a_3, which represent the average relations between the X variables and the Y variable. This estimated equation can then be used to derive predicted values of the dependent variable for each city by substituting the value of each individual city's independent variables into the regression equation and multiplying these values by the appropriate estimated coefficient.

Regression equations do not result in perfect predictions; the actual value of the dependent variable will differ from the predicted value by some residual.[15] This residual reflects how the expenditures of each given city

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[15] In fact, the basic property of the estimated weights in regression analysis is that the sum of the squared residuals across the entire sample will be as small as is possible. Also, the mean value of the residual will be zero.

differ from the average expenditure of cities which have the same values of the independent variables. This residual can be interpreted as the town specific tastes for local services.

In this paper we will use the regression procedure to estimate the linear relationship between the dependent variable, expenditures, and a set of independent variables which "explain" variations in total expenditures. The independent variables are a set of municipal needs variables, including density, population, the percentage of population below the poverty line, and the crime rate, and a fiscal capacity variable.

It should be noted that the predicted expenditures derived from such a regression equation are estimates of total expenditures rather than expenditures for the minimum levels of services. The latter variable is needed as a measure for C_{MB}. However, the estimated equation can be used to obtain estimates of C_{MB} by netting out the effects of the variables which determine discretionary expenditures. This is accomplished by using the municipality specific values of all independent variables, except for the fiscal capacity variable, to compute predicted expenditures. In computing predicted expenditures the actual value of fiscal capacity in each municipality is replaced in the estimated equation by a value of fiscal capacity judged to be the minimum necessary in New Jersey communities for the financing of required services. The resulting predicted expenditures will thus vary across communities according to variations in the independent "need" variables, and will provide an estimate of the total cost of providing required, or "minimum bundle", services. Conversely, discretionary expenditures are determined by the level of fiscal capacity above the minimum necessary to finance required services, and by a set of taste variables, implicitly included in the regression residuals.

This approach is similar to that developed by Brazer, et. al. [6] in a similar study of local government needs in New York State. They explain the usefulness of the regression approach to determining minimal bundle costs as follows:

> The virtue of this approach to estimating expenditure needs is that it is based on actual behavior patterns of the jurisdictions included in our sample of school districts. It involves no imposition of outside judgment nor, in fact, is it in any way dependent on the analyst's judgment except insofar as that judgment has been exercised in the selection of need variables. That selection, clearly, is constrained by the availability of data and by the limits on the imagination and insight of the authors.

In the following paragraphs we will describe the actual regression equation that was estimated in order to carry out the C_{MB} estimation procedure described above. The equation presented in Table 9 estimates total per capita municipal expenditures.[16]

The first variables included in the minimum bundle predicting equation are population (POP) and density (DENS). As discussed above, we expect that a large population is associated with high per capita expenditures because of the increased dependence of city residents on certain types of services. Such services include street cleaning and paid fire companies. The price of services in large, dense localities also tends to be high due to the historical structure of city-rural wage differentials. As reported in Table 9, the estimated regression coefficient for the population variable is .0050 and the t statistic indicates that there is less than a one percent chance that the coefficient is actually zero. This .0050 coefficient indicates that per capita total

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[16] We also estimated equations for eight expenditure categories. The final results were not significantly different from the total expenditure equation to warrant presentation of the disaggregated results.

TABLE 9

Regression Equation for Estimating Per Capita Municipal Expenditures

Dependent Variable	Independent Variables								
MUNEXP	CONSTANT	POP	POV	EQVALN	DENS	OCEAN	SUBURB	RURAL	NONWHT
	71.63	.0005*	1.70	.0058*	.0010	236.5*	-14.49	-26.04	2.79*
	(2.43)	(3.093)	(0.516)	(5.74)	(.959)	(5.64)	(-0.611)	(-1.003)	(3.78)

R^2 = 80.0

Standard Error of Estimate = 58.87

Starred (*) coefficients are significant at better than the .01 level.

Numbers in parentheses are t statistics.

See text for definitions of variable names.

expenditures increase by $5 for each additional 1000 individuals living in the locality. The coefficient of the density variable is .001 but this estimated coefficient is not significantly different from zero. The high correlation between density and population makes it difficult to distinguish the influence of density from the effect of population on expenditures.

The third need variable in the regression (POV) is the percent of families who earn incomes less than the poverty line, as defined by the U.S. Census. Poor families place obvious financial burdens on local governments. Welfare expenditures go exclusively to this portion of the local population and other services, such as publicly provided health care, are used disproportionately by poor families. The estimated coefficient for this variable is 1.7; that is, per capita expenditures increase by $1.70 for each additional percentage of poor families in the total population. The coefficient is not estimated precisely, however. The t statistic is less than one and, therefore, it is not possible to reject the hypothesis that the actual coefficient is zero. The POV variable is correlated with a number of other variables in the regression. POV varies positively with population (POP) and per capita equalized valuation (EQVALN), percent of non-white families in the total population (NONWHT), and the crime rate (CRIME). Thus it is possible that some of the expected influence of POV on expenditures is being captured by the coefficients on these other variables. The percentage of non-white families in the population (NONWHT) is also included in the regression. The percentage non-white variable reflects special needs that may be related to concentrations of non-white citizens. The coefficient for NONWHT is positive; local governments, on average, spend $2.79 per capita more for each additional percent of the total population which is non-white.

To capture the influence of need variables which could not be measured empirically, but which vary systematically across types of cities in the sample, zero-one variables which distinguish types of towns were included in the predicting equation. The variable SUBURB is equal to one if the locality is classified as suburban, the variable RURAL is equal to one if the locality is in a rural area. The coefficients of these variables are interpreted as differences in expenditures between cities and suburbs and between cities and rural localities. On average, suburbs spend -$14.49 per capita less than cities, holding all other variables constant, and rural areas spend -$26.04 per capita less than cities. There is a good deal of variability among cities in each category, however. Neither of the coefficients are significantly different from zero.

A zero-one variable to distinguish the ocean resorts in our sample (Asbury Park, Atlantic City, Ocean City and Wildwood Crest) was also added to the regression in order to account for the unusual expenditure patterns of these cities, which have small year-round populations, but relatively large total expenditures due to summer residents.

Per capita equalized valuation (EQVALN) is the fiscal capacity variable used in the regression. As expected, this coefficient has a positive (.0058) coefficient which is significantly different from zero at the one percent confidence level. Evaluated at the mean values or EQVALN and total expenditures, this .0058 coefficient implies that expenditures increase by only .34 percent as equalized valuation increases by one percent.

Although some of the individual coefficients are estimated imprecisely, 80% of the total variation in local government expenditures are explained by the regression. This implies that twenty percent of the variation is due

to idiosyncratic determinants which are at least in part related to varying tastes for public services across towns.

Following the procedure outlined above the coefficients estimated in this equation are used to generate an estimated minimum bundle expenditure level. The procedure is to net out the effects of discretionary expenditures from our estimated equation. By calculating a predicted value of expenditures from our regression equation, we by definition subtract out the impact of the estimated residual, which we have argued includes discretionary taste factors. In addition we subtracted out the effect on predicted expenditure of fiscal capacity, as measured by EQVALN above the minimum necessary for providing minimum bundle services. We chose as this minimum value of equalized valuation $4,000, which is the equalized value of Camden, and the lowest value in our sample.

Table 10, column 1, lists the estimates of the minimum bundles for the 62 cities in the sample. The cities are divided into urban- and non-urban-aid and then into the five categories used in the preceding tables. Column 1 of Table 11 presents weighted average minimum bundles for the various categories of cities. The weighted average minimum bundle in urban-aid cities is 118% greater than the weighted average bundle in non-urban-aid localities; urban-aid cities must spend an average of $295 on necessities while non-urban-aid cities must spend $135.

The averages indicate that as expected, the cost of providing a minimum bundle of services is higher the more urban a community is, and the poorer or lower status its residents are. Note that the average minimum bundle for low and moderate income suburban communities is pushed up by the fact that two of of the six communities in this category are ocean communities with extraordinarily

TABLE 10

"Minimum Bundle", and Municipal Overburden Indices

Low SES Urban Communities

Municipality	Per Capita Cost of "Minimum Bundle"	Rank	Municipal Overburden Index (with Equal. Value)	Rank	Municipal Overburden Index (with Personal Income)	Rank
ATLANTIC CITY	512.	62	0.0521	60	0.1320	62
LITTLE FERRY	114.	21	0.0068	17	0.0204	15
MOONACHIE	107.	17	0.0017	1	0.0199	13
CAMDEN CITY	300.	55	0.0504	59	0.0690	59
BRIDGETON	211.	48	0.0351	54	0.0499	52
VINELAND	154.	35	0.0113	36	0.0305	36
EAST ORANGE	316.	56	0.0399	57	0.0521	53
IRVINGTON	167.	37	0.0172	45	0.0285	33
NEWARK	489.	60	0.0743	62	0.1070	60
ORANGE	247.	51	0.0347	53	0.0452	50
BAYONNE	169.	38	0.0159	43	0.0336	40
HOBOKEN	200.	44	0.0279	52	0.0359	42
JERSEY CITY	322.	57	0.0493	58	0.0641	57
NORTH BERGEN	139.	30	0.0082	24	0.0241	25
UNION CITY	189.	41	0.0244	50	0.0359	43
WEST NEW YORK	182.	39	0.0217	48	0.0302	35
TRENTON	291.	54	0.0390	56	0.0527	54
NEW BRUNSWICK	207.	46	0.0220	49	0.0454	51
PERTH AMBOY	159.	36	0.0107	35	0.0271	31
ASBURY PARK	501.	61	0.0587	61	0.1285	61
LAKEWOOD	193.	43	0.0126	38	0.0406	47
CLIFTON	150.	33	0.0088	27	0.0268	29
PASSAIC CITY	212.	49	0.0256	51	0.0436	49
PATERSON	286.	53	0.0368	55	0.0598	55
ELIZABETH	221.	50	0.0207	47	0.0399	46
HILLSIDE	128.	26	0.0085	25	0.0231	22
PLAINFIELD	253.	52	0.0177	46	0.0336	41
PHILLIPSBURG	123.	25	0.0116	37	0.0263	27

TABLE 10 (cont.)

Moderate and High SES Urban Communities

Municipality	Per Capita Cost of "Minimum Bundle"	Rank	Municipal Overburden Index (with Equal. Value)	Rank	Municipal Overburden Index (with Personal Income)	Rank
FORT LEE	136.	29	0.0163	7	0.0054	10
NEW MILFORD	121.	23	0.0218	19	0.0094	29
WALDWICK	111.	18	0.0205	16	0.0081	23
CINNAMINSON	131.	27	0.0264	28	0.0087	26
PELHAM	145.	32	0.0314	37	0.0095	30
MONTCLAIR	210.	47	0.0296	34	0.0167	44
HAMILTON TWP	154.	34	0.0326	39	0.0133	40
LONG BRANCH	182.	40	0.0269	30	0.0130	39
NEPTUNE TWP	202.	45	0.0414	48	0.0152	42
POMPTON LAKES	111.	19	0.0210	18	0.0078	22

Low and Moderate SES Suburban Communities

Municipality	Per Capita Cost of "Minimum Bundle"	Rank	Municipal Overburden Index (with Equal. Value)	Rank	Municipal Overburden Index (with Personal Income)	Rank
FLORENCE	117.	22	0.0241	24	0.0066	16
LAUREL SPRINGS	94.	7	0.0208	17	0.0096	32
OCEAN CITY	358.	59	0.0669	58	0.0070	18
WILDWOOD CREST	333.	58	0.0599	56	0.0065	15
WASHINGTON TWP	100.	11	0.0220	21	0.0063	14
SAYREVILLE	104.	15	0.0218	20	0.0061	13

TABLE 10 (cont.)

High SES Suburban Communities

Municipality	Per Capita Cost of "Minimum Bundle"	Rank	Municipal Overburden Index (with Equal. Value)	Rank	Municipal Overburden Index (with Personal Income)	Rank
ENGLEWOOD CLIFFS	100.	10	0.0118	4	0.0021	3
MOORESTOWN	113.	20	0.0164	8	0.0053	9
MILLBURN	98.	9	0.0076	1	0.0032	5
CHATHAM BORO	91.	4	0.0133	5	0.0047	8
PEQUANNOCK	94.	8	0.0173	11	0.0057	11
MONTGOMERY	106.	16	0.0189	12	0.0043	6
NEW PROVIDENCE	190.	42	0.0321	38	0.0100	33
WESTFIELD	121.	24	0.0170	9	0.0071	19

Rural Communities

Municipality	Per Capita Cost of "Minimum Bundle"	Rank	Municipal Overburden Index (with Equal. Value)	Rank	Municipal Overburden Index (with Personal Income)	Rank
DENNIS TWP	87.	3	0.0243	26	0.0058	12
MIDDLE TWP	142.	31	0.0399	45	0.0095	31
MILLVILLE	100.	12	0.0171	10	0.0077	20
WASHINGTON TWP	91.	5	0.0097	3	0.0025	4
PLUMSTED	102.	13	0.0278	32	0.0102	34
PITTSGROVE	135.	28	0.0362	44	0.0148	41
UPPER PITTSGROVE	102.	14	0.0236	23	0.0088	28
BERMINSTER	86.	2	0.0080	2	0.0019	2
NEWTON	92.	6	0.0201	14	0.0077	21
BELVIDERE	82.	1	0.0146	6	0.0047	7

TABLE 11

Average Values of the Per Capita Cost of Minimum Bundles, and of Two Municipal Overburden Indices, by Community Type

Community Types	Per Capita Cost of "Minimum Bundle"	Municipal Overburden Index (with Equalized Value)	Municipal Overburden Index (with Personal Income)
Urban Aid Cities	295	.039	.060
Non Urban Aid Cities	135	.008	.025
Low SES Urban	294	.039	.060
Moderate & High SES Urban	160	.012	.029
Low & Moderate SES Suburban	153	.006	.030
High SES Suburban	116	.006	.017
Rural	106	.008	.023

high expenditures and minimum bundles.

The cities with the largest minimum bundles are Atlantic City ($513), Newark ($490), and Asbury Park ($502). It should be noted that all of the ocean cities have high minimum bundles (Atlantic City is ranked 62, Asbury Park 61, Ocearn City 59, and Wildwood Crest 58). Camden ($300) and Jersey City ($323) also have very high per capita expenditure needs. Belvidere ($82), Bedminster ($87), and Dennis Township ($87) have the smallest per capita expenditure needs. All three of these towns are classified as rural.

The reason for calculating minimum bundles was to be able to develop an index of municipal overburden that would indicate the revenue effort necessary to provide a minimum bundle of services in each community. As shown in equation (1), the construction of this index involves subtracting grants-in-aid from the total cost of a minimum bundle, in order to calculate the own-raised revenue required to finance minimum bundle expenditures. This amount is then divided by fiscal capacity in order to arrive at the index of municipal overburden.

In principle lump sum grants have a slightly different effect on the minimum bundle costs than matching grants. All lump sum grants can be used to defray the costs of the minimum bundle, but matching grants are directly related to total expenditures. Thus matching grants may equally decrease the price of each unit of service while lump sum grants decrease the price of initial units of service but not marginal service units. Thus, only those matching grants which are awarded because of minimum bundle expenditures should be subtracted from C_{MB}. It is not possible, however, to distinguish matching grants from lump sum aid in our data. It is necessary, therefore, to subtract from C_{MB} all grants-in-aid. This causes the numerator of the index to be understated by the amount of matching grants that are dependent on non-minimum bundle

expenditures ($M.G._{total} - M.G._{MB}$). The error is small relative to the total size of the numerator.[17]

After subtracting grants from the estimated costs of essential services, the remainder was divided by local capacity. Table 10 lists the value of the indexes for each town. Column 2 uses per capita equalized valuation as the local capacity measure while column 3 uses per capita personal income. Likewise, columns 3 and 5 of Table 11 indicate the weighted averages of the two indices for each community type.

In interpreting the two indices, recall that they are relative measures with a higher valued index number implying a greater degree of municipal overburden. Looking first at the averages in Table 11, we see that under both indices overburden is significantly higher in urban-aid than non-urban-aid cities. Again, higher degress of urbanization, and lower community SES, lead to a greater degree of overburden.

Looking at the data for individual cities, we see that most low SES, cities have quite high overburden. Several communities that are classified as low SES urban have a relatively low degree of overburden, namely Little Ferry, Moonachie, and Hillside.

With the exception of Fort Lee which has very low index values, the group of moderate and high SES urban communities have only a relatively moderate degree of municipal overburden.

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[17] If we assume that some given percent of all grants are matching grants it is possible to solve for the matching rate, m, and compute an average matching rate. With this estimate of m it is then possible to estimate equation (1). We experimented with various different percentages of matching grants and found that the value of the final index did not change substantially. This indicates that the proportion of total grants which are matching, and which go toward discretionary expenditures is very small.

Again excepting Ocean City and Wildwood Crest--the two ocean communities--the suburban communities have reasonably low index values. The rural communities however show considerably more variance, with a number of very low values, but a few that are moderately high. This indicates that the problem of municipal overburden, while primarily an urban phenomenon, can exist within rural communities as well.

Comparing the two tax-price indices with these two indices reveals some interesting patterns. The largest cities are shown to have high levels of overburden under both sets of overburden indices. However, there is considerable variation in the relative ranking of many other communities under the two sets of indices. The most striking comparison is between the two indices calculated using equalized valuation for two ocean communities, Ocean City and Wildwood Crest. Under the tax-price measure, both communities have very low tax-prices, while under the minimum bundle measure they have among the highest value of the index. The apparent explanation has to do with the unique nature of beach resorts. Although they have reasonably high fiscal capacities, there are significant demands placed upon these resources by the service requirements of the summer visitors. In other words, their non-discretionary expenditures are necessitated by factors other than a large poverty population and high density, factors that are important for large urban cities.

V.

In this paper we have explored the problem of municipal overburden. It is a problem that is best seen as a symptom of the complexity and interdependencies of the political economy of local governments. Although communities

that face a municipal overburden are at a disadvantage in financing public schools, municipal overburden is no more a school financing problem, than a municipal problem. The root of the problem is the existence of a multitude of local governments within the context of an unequal spatial distribution of resources and public needs and requirements.

We have found the literature on municipal overburden deficient. Although the overburden measures suggested in the literature are useful in describing the fiscal environment of local governments, they fail to provide a comprehensive indicator for the problem of overburden.

We have thus suggested a measure of municipal overburden which we believe overcomes some of the shortcomings of alternative measures. Our measure is based on the concept of a tax-price. A tax-price measures the average fiscal effort residents of a community must face per unit of local public service provided. We believe that in general it is possible to divide the public goods and services provided by a local government into those that the local government must provide, and those that are purely discretionary. The set of required services are determined by a combination of legal requirements, technical requirements, and generally accepted norms or standards of service within the State. In light of this distinction among local public services, we define municipal overburden in terms of the fiscal effort necessary for each community to provide the required, or "minimum bundle" of services. This effort is a function of the size and the cost of the "minimum bundle" in each community, and the share of this cost that must be borne by local residents (as opposed to being financed by grants-in-aid).

Based on a representative sample of sixty-two New Jersey municipalities, we have determined that a high degree of overburden exists in nearly all of

the State's poorer cities. In general, the degree of overburden is proportional to the degree of urbanization of a community, and to the socio-economic status of its residents, with overburden highest in low status communities. However, such generalizations hide the fact that significant variation in the degree of municipal overburden exists within classes of communities. In particular, several rural communities have a quite high degree of overburden.

Before concluding, we would like to emphasize that while we believe on theoretical grounds, that the best way to measure municipal overburden is by measuring the effort necessary to provide a "minimum bundle" of services, the actual method we employed to construct such an overburden index is subject to a number of, perhaps serious, shortcomings. Our purpose in this paper was to demonstrate that it is possible to develop an index of municipal overburden. We did not intend to suggest that the particular form of our constructed index be used as a definitive measure of overburden. Rather, we have attempted to demonstrate a reasonable methodology for constructing an index.

Several comments are in order concerning the methodology we employed in constructing our index. We assumed, as is the common practice, that the burden of own-raised revenues, taxes, and user fees falls on the residents of the community that raises the revenue. Although this is a convenient assumption, it is not necessarily justified, because it is possible that the burden of locally raised revenue can at least in part be exported to non-residents. For example, user fees are often applied to services which are used by a significant number of non-residents, the burden of local property taxes on businesses can often be exported to non-residents through higher prices on products that are produced and sold. Needless to say, accurate estimates of the degree of tax exporting are hard to come by.

We have also ignored the issue of overlying jurisdictions in our burden index calculations. As was mentioned above, there exist a significant variation in the level of expenditures of county governments. In principle, we should have estimated the distribution of county-provided public services among each county's component municipalities. However, because of the difficulty of carrying out this task, we have ignored county services in calculating our index.

Finally, a word about the regression technique employed to estimate the costs of a "minimum bundle." It is possible that a number of biases exist in the actual estimation procedure. For instance, if an excluded variable from the regression, representing discretionary tastes for public services, is correlated with an included "need" variable, the coefficient of the "need" variable will be statistically biased and this will bias our predicted cost of the "minimum bundle."

Despite these shortcomings, we believe that we have demonstrated a methodology that allows us to say some reasonable things about municipal overburden, and hopefully will open the way to the estimation of more refined indices of overburden.

Here is not the place to enter into a detailed discussion of the possible policy options available to deal with municipal overburden. However, we shall conclude this paper with a couple of general observations.

The problem of municipal overburden is a problem of too many competing needs for a limited amount of resources. It is thus more a general problem of local government finance, than specifically a problem of school finance. This suggests that public policies designed to address the issue of municipal overburden must be broader based than merely adjustments to a school finance

formula. As the problem is one of deficient resources relative to needs, a preferred policy instrument would be some form of grants-in-aid directly tied to the levels of those needs and resources.

It appears likely that the problem of municipal overburden can not be solved by simple adjustments to the state aid formula for public education. The current legislation provides a matching grant to local communities, where the matching rate (grant/local contribution) is higher in poorer communities. What would be the impact of further raising the matching rate in communities with a high degree of municipal overburden? Although it is difficult to predict the impact, we do know that the net cost of an extra dollar spent on education would be reduced for overburdened communities. However, because of their lack of resources relative to fiscal demands, they may be unable to increase their local effort for educational purposes. The consequence of this is that spending on education may increase, if at all, only incrementally. Again, it appears that a solution requires a comprehensive and coordinated approach that deals with local governments, providers of public education and municipal functions, in a unified way.

APPENDIX

Municipal Sample by Community Type

Low SES Urban

Atlantic City
Little Ferry
Moonachie
Camden City
Bridgeton
Vineland
East Orange
Irvington
Newark
Orange
Bayonne
Hoboken
Jersey City
North Bergen
Union City
West New York
Trenton
New Brunswick
Perth Amboy
Asbury Park
Lakewood
Clifton
Passaic City
Paterson
Elizabeth
Hillside Twp.
Plainfield
Phillipsburg

Moderate SES Urban

Fort Lee
New Milford
Pennsauken
Hamilton Township (Mercer Co.)
Long Branch
Neptune Township
Pompton Lakes

High SES Urban

Waldwick
Cinnaminson
Montclair

Low SES Suburban

Florence

Moderate SES Suburban

Laurel Springs
Ocean City
Wildwood Crest
Washington Township (Gloucester Co.)
Sayreville

High SES Suburban

Englewood Cliffs
Moorestown
Millburn
Chatham Borough
Pequannock
Montgomery
New Providence
Westfield

Low SES Rural

Dennis Township
Middle Township
Millville
Plumsted
Pittsgrove
Upper Pittsgrove Township

Moderate SES Rural

Washington Township (Mercer Co.)
Newton
Belvidere

High SES Rural

Bedminster

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